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GAUN, HANPLING

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Cys Asn Asp Trp His Thr Gly Pro Leu Ala Ser Tyr Leu Lys Asn Asn	
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 Ala Gly Met Asn Val Val Phe Val Gly Ala Glu Met Ala Pro Trp Ser  
                   85                  90                  95  
 Lys Thr Gly Gly Leu Gly Asp Val Leu Gly Gly Leu Pro Pro Ala Met  
                   100                  105                  110  
 Ala Ala Asn Gly His Arg Val Met Val Ile Ser Pro Arg Tyr Asp Gln  
           115                  120                  125  
 Tyr Lys Asp Ala Trp Asp Thr Ser Val Val Ala Glu Ile Lys Val Ala  
   130                  135                  140  
 Asp Arg Tyr Glu Arg Val Arg Phe Phe His Cys Tyr Lys Arg Gly Val  
  145                  150                  155                  160  
 Asp Arg Val Phe Ile Asp His Pro Ser Phe Leu Glu Lys Val Trp Gly  
                   165                  170                  175  
 Lys Thr Gly Glu Lys Ile Tyr Gly Pro Asp Thr Gly Val Asp Tyr Lys  
           180                  185                  190  
 Asp Asn Gln Met Arg Phe Ser Leu Leu Cys Gln Ala Ala Leu Glu Ala  
           195                  200                  205  
 Pro Arg Ile Leu Asn Leu Asn Asn Asn Pro Tyr Phe Lys Gly Thr Tyr  
   210                  215                  220  
 Gly Glu Asp Val Val Phe Val Cys Asn Asp Trp His Thr Gly Pro Leu  
  225                  230                  235                  240  
 Ala Ser Tyr Leu Lys Asn Asn Tyr Gln Pro Asn Gly Ile Tyr Arg Asn  
                   245                  250                  255  
 Ala Lys Val Ala Phe Cys Ile His Asn Ile Ser Tyr Gln Gly Arg Phe  
           260                  265                  270

Ala	Phe	Glu	Asp	Tyr	Pro	Glu	Leu	Asn	Leu	Ser	Glu	Arg	Phe	Arg	Ser	275	280	285
Ser	Phe	Asp	Phe	Ile	Asp	Gly	Tyr	Asp	Thr	Pro	Val	Glu	Gly	Arg	Lys	290	295	300
Ile	Asn	Trp	Met	Lys	Ala	Gly	Ile	Leu	Glu	Ala	Asp	Arg	Val	Leu	Thr	305	310	315
Val	Ser	Pro	Tyr	Tyr	Ala	Glu	Glu	Leu	Ile	Ser	Gly	Ile	Ala	Arg	Gly	325	330	335
Cys	Glu	Leu	Asp	Asn	Ile	Met	Arg	Leu	Thr	Gly	Ile	Thr	Gly	Ile	Val	340	345	350
Asn	Gly	Met	Asp	Val	Ser	Glu	Trp	Asp	Pro	Ser	Lys	Asp	Lys	Tyr	Ile	355	360	365
Thr	Ala	Lys	Tyr	Asp	Ala	Thr	Thr	Ala	Ile	Glu	Ala	Lys	Ala	Leu	Asn	370	375	380
Lys	Glu	Ala	Leu	Gln	Ala	Glu	Ala	Gly	Leu	Pro	Val	Asp	Arg	Lys	Ile	385	390	395
Pro	Leu	Ile	Ala	Phe	Ile	Gly	Arg	Leu	Glu	Glu	Gln	Lys	Gly	Pro	Asp	405	410	415
Val	Met	Ala	Ala	Ala	Ile	Pro	Glu	Leu	Met	Gln	Glu	Asp	Val	Gln	Ile	420	425	430
Val	Leu	Leu	Gly	Thr	Gly	Lys	Lys	Lys	Phe	Glu	Lys	Leu	Leu	Lys	Ser	435	440	445
Met	Glu	Glu	Lys	Tyr	Pro	Gly	Lys	Val	Arg	Ala	Val	Val	Lys	Phe	Asn	450	455	460
Ala	Pro	Leu	Ala	His	Leu	Ile	Met	Ala	Gly	Ala	Asp	Val	Leu	Ala	Val	465	470	475
Pro	Ser	Arg	Phe	Glu	Pro	Cys	Gly	Leu	Ile	Gln	Leu	Gln	Gly	Met	Arg	485	490	495
Tyr	Gly	Thr	Pro	Cys	Ala	Cys	Ala	Ser	Thr	Gly	Gly	Leu	Val	Asp	Thr	500	505	510
Val	Ile	Glu	Gly	Lys	Thr	Gly	Phe	His	Met	Gly	Arg	Leu	Ser	Val	Asp	515	520	525
Cys	Lys	Val	Val	Glu	Pro	Ser	Asp	Val	Lys	Lys	Val	Ala	Ala	Thr	Leu	530	535	540
Lys	Arg	Ala	Ile	Lys	Val	Val	Gly	Thr	Pro	Ala	Tyr	Glu	Glu	Met	Val	545	550	555
Arg	Asn	Cys	Met	Asn	Gln	Asp	Leu	Ser	Trp	Lys	Gly	Pro	Ala	Lys	Asn	565	570	575

Trp Glu Asn Val Leu Leu Gly Leu Gly Val Ala Gly Ser Ala Pro Gly  
580 585 590

Ile Glu Gly Asp Glu Ile Ala Pro Leu Ala Lys Glu Asn Val Ala Ala  
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Pro

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<211> 2007

<212> DNA

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<220>

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gac gcc gcc agg ttg ccc cgc gct cgg cgc aat gcg gtc tcc aaa cgg	96
Asp Ala Ala Arg Leu Pro Arg Ala Arg Arg Asn Ala Val Ser Lys Arg	
20 25 30	
agg gat cct ctt cag ccg gtc ggc cgg tac ggc tcc gcg acg gga aac	144
Arg Asp Pro Leu Gln Pro Val Gly Arg Tyr Gly Ser Ala Thr Gly Asn	
35 40 45	
acg gcc agg acc ggc gcc gcg tcc tgc cag aac gcc gca ttg gcg gac	192
Thr Ala Arg Thr Gly Ala Ala Ser Cys Gln Asn Ala Ala Leu Ala Asp	
50 55 60	
gtt gag atc gtt gag atc aag tcc atc gtc gcc gcg ccg ccg acg agc	240
Val Glu Ile Val Glu Ile Lys Ser Ile Val Ala Ala Pro Pro Thr Ser	
65 70 75 80	
ata gtg aag ttc cca ggg cgc ggg cta cag gat gat cct tcc ctc tgg	288
Ile Val Lys Phe Pro Gly Arg Gly Leu Gln Asp Asp Pro Ser Leu Trp	
85 90 95	
gac ata gca ccg gag act gtc ctc cca gcc ccg aag cca ctg cat gaa	336
Asp Ile Ala Pro Glu Thr Val Leu Pro Ala Pro Lys Pro Leu His Glu	
100 105 110	
tcg cct gcg gtt gac gga gat tca aat gga att gca cct cct aca gtt	384
Ser Pro Ala Val Asp Gly Asp Ser Asn Gly Ile Ala Pro Pro Thr Val	
115 120 125	
gag cca tta gta cag gag gcc act tgg gat ttc aag aaa tac atc ggt	432
Glu Pro Leu Val Gln Glu Ala Thr Trp Asp Phe Lys Lys Tyr Ile Gly	
130 135 140	

ttt gac gag cct gac gaa gcg aag gat gat tcc agg gtt ggt gca gat Phe Asp Glu Pro Asp Glu Ala Lys Asp Asp Ser Arg Val Gly Ala Asp 145 150 155 160	480
gat gct ggt tct ttt gaa cat tat ggg aca atg att ctg ggc ctt tgt Asp Ala Gly Ser Phe Glu His Tyr Gly Thr Met Ile Leu Gly Leu Cys 165 170 175	528
ggg gag aat gtt atg aac gtg atc gtg gtg gct gct gaa tgt tct cca Gly Glu Asn Val Met Asn Val Ile Val Val Ala Ala Glu Cys Ser Pro 180 185 190	576
tgg tgc aaa aca ggt ggt ctt gga gat gtt gtg gga gct tta ccc aag Trp Cys Lys Thr Gly Gly Leu Gly Asp Val Val Gly Ala Leu Pro Lys 195 200 205	624
gct tta gcg aga aga gga cat cgt gtt atg gtt gtg gta cca agg tat Ala Leu Ala Arg Arg Gly His Arg Val Met Val Val Pro Arg Tyr 210 215 220	672
ggg gac tat gtg gaa gcc ttt gat atg gga atc cgg aaa tac tac aaa Gly Asp Tyr Val Glu Ala Phe Asp Met Gly Ile Arg Lys Tyr Tyr Lys 225 230 235 240	720
gct gca gga cag gac cta gaa gtg aac tat ttc cat gca ttt att gat Ala Ala Gly Gln Asp Leu Glu Val Asn Tyr Phe His Ala Phe Ile Asp 245 250 255	768
gga gtc gac ttt gtg ttc att gat gcc tct ttc cgg cac cgt caa gat Gly Val Asp Phe Val Phe Ile Asp Ala Ser Phe Arg His Arg Gln Asp 260 265 270	816
gac ata tat ggg gga agt agg cag gaa atc atg aag cgc atg att ttg Asp Ile Tyr Gly Gly Ser Arg Gln Glu Ile Met Lys Arg Met Ile Leu 275 280 285	864
ttt tgc aag gtt gct gtt gag gtt cct tgg cac gtt cca tgc ggt ggt Phe Cys Lys Val Ala Val Glu Val Pro Trp His Val Pro Cys Gly Gly 290 295 300	912
gtg tgc tac gga gat gga aat ttg gtg ttc att gcc atg aat tgg cac Val Cys Tyr Gly Asp Gly Asn Leu Val Phe Ile Ala Met Asn Trp His 305 310 315 320	960
act gca ctc ctg cct gtt tat ctg aag gca tat tac aga gac cat ggg Thr Ala Leu Leu Pro Val Tyr Leu Lys Ala Tyr Tyr Arg Asp His Gly 325 330 335	1008
tta atg cag tac act cgc tcc gtc ctc gtc ata cat aac atc ggc cac Leu Met Gln Tyr Thr Arg Ser Val Leu Val Ile His Asn Ile Gly His 340 345 350	1056
cag ggc cgt ggt cct gta cat gaa ttc ccg tac atg gac ttg ctg aac Gln Gly Arg Gly Pro Val His Glu Phe Pro Tyr Met Asp Leu Leu Asn 355 360 365	1104



act aac ctt caa cat ttc gag ctg tac gat ccc gtc ggt ggc gag cac	1152
Thr Asn Leu Gln His Phe Glu Leu Tyr Asp Pro Val Gly Gly Glu His	
370 375 380	
gcc aac atc ttt gcc gcg tgt gtt ctg aag atg gca gac cgg gtg gtg	1200
Ala Asn Ile Phe Ala Ala Cys Val Leu Lys Met Ala Asp Arg Val Val	
385 390 395 400	
act gtc agc cgc ggc tac ctg tgg gag ctg aag aca gtg gaa ggc ggc	1248
Thr Val Ser Arg Gly Tyr Leu Trp Glu Leu Lys Thr Val Glu Gly Gly	
405 410 415	
tgg ggc ctc cac gac atc atc cgt tct aac gac tgg aag atc aat ggc	1296
Trp Gly Leu His Asp Ile Ile Arg Ser Asn Asp Trp Lys Ile Asn Gly	
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att cgt gaa cgc atc gac cac cag gag tgg aac ccc aag gtg gac gtg	1344
Ile Arg Glu Arg Ile Asp His Gln Glu Trp Asn Pro Lys Val Asp Val	
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cac ctg cgg tcg gac ggc tac acc aac tac tcc ctc gag aca ctc gac	1392
His Leu Arg Ser Asp Gly Tyr Thr Asn Tyr Ser Leu Glu Thr Leu Asp	
450 455 460	
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Ala Gly Lys Arg Gln Cys Lys Ala Ala Leu Gln Arg Asp Val Gly Leu	
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Glu Val Arg Asp Asp Val Pro Leu Leu Gly Phe Ile Gly Arg Leu Asp	
485 490 495	
gga cag aag ggc gtg gac atc atc ggg gac gcg atg ccg tgg atc gcg	1536
Gly Gln Lys Gly Val Asp Ile Ile Gly Asp Ala Met Pro Trp Ile Ala	
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Gly Gln Asp Val Gln Leu Val Met Leu Gly Thr Gly Pro Pro Asp Leu	
515 520 525	
gaa cga atg ctg cag cac ttg gag cgg gag cat ccc aac aag gtg cgc	1632
Glu Arg Met Leu Gln His Leu Glu Arg Glu His Pro Asn Lys Val Arg	
530 535 540	
ggg tgg gtc ggg ttc tcg gtc cta atg gtg cat cgc atc acg ccg ggc	1680
Gly Trp Val Gly Phe Ser Val Leu Met Val His Arg Ile Thr Pro Gly	
545 550 555 560	
gcc agc gtg ctg gtg atg ccc tcc cgc ttc gcc ggc ggg ctg aac cag	1728
Ala Ser Val Leu Val Met Pro Ser Arg Phe Ala Gly Gly Leu Asn Gln	
565 570 575	
ctc tac gcg atg gca tac ggc acc gtc cct gtg gtg cac gcc gtg ggc	1776
Leu Tyr Ala Met Ala Tyr Gly Thr Val Pro Val Val His Ala Val Gly	
580 585 590	

ggg ctc agg gac acc gtg gcg ccg ttc gac ccg ttc ggc gac gcc ggg 1824  
 Gly Leu Arg Asp Thr Val Ala Pro Phe Asp Pro Phe Gly Asp Ala Gly  
 595 600 605  
 ctc ggg tgg act ttt gac cgc gcc gag gcc aac aag ctg atc gag gtg 1872  
 Leu Gly Trp Thr Phe Asp Arg Ala Glu Ala Asn Lys Leu Ile Glu Val  
 610 615 620  
 ctc agc cac tgc ctc gac acg tac cga aac tac gag gag agc tgg aag 1920  
 Leu Ser His Cys Leu Asp Thr Tyr Arg Asn Tyr Glu Glu Ser Trp Lys  
 625 630 635 640  
 agt ctc cag gcg cgc ggc atg tcg cag aac ctc agc tgg gac cac gcg 1968  
 Ser Leu Gln Ala Arg Gly Met Ser Gln Asn Leu Ser Trp Asp His Ala  
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 gct gag ctc tac gag gac gtc ctt gtc aag tac cag tgg 2007  
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 35 40 45  
 Thr Ala Arg Thr Gly Ala Ala Ser Cys Gln Asn Ala Ala Leu Ala Asp  
 50 55 60  
 Val Glu Ile Val Glu Ile Lys Ser Ile Val Ala Ala Pro Pro Thr Ser  
 65 70 75 80  
 Ile Val Lys Phe Pro Gly Arg Gly Leu Gln Asp Asp Pro Ser Leu Trp  
 85 90 95  
 Asp Ile Ala Pro Glu Thr Val Leu Pro Ala Pro Lys Pro Leu His Glu  
 100 105 110  
 Ser Pro Ala Val Asp Gly Asp Ser Asn Gly Ile Ala Pro Pro Thr Val  
 115 120 125  
 Glu Pro Leu Val Gln Glu Ala Thr Trp Asp Phe Lys Lys Tyr Ile Gly  
 130 135 140  
 Phe Asp Glu Pro Asp Glu Ala Lys Asp Asp Ser Arg Val Gly Ala Asp  
 145 150 155 160

Asp	Ala	Gly	Ser	Phe	Glu	His	Tyr	Gly	Thr	Met	Ile	Leu	Gly	Leu	Cys		
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Gly	Glu	Asn	Val	Met	Asn	Val	Ile	Val	Val	Ala	Ala	Glu	Cys	Ser	Pro		
			180					185						190			
Trp	Cys	Lys	Thr	Gly	Gly	Leu	Gly	Asp	Val	Val	Gly	Ala	Leu	Pro	Lys		
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Ala	Leu	Ala	Arg	Arg	Gly	His	Arg	Val	Met	Val	Val	Val	Pro	Arg	Tyr		
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Gly	Asp	Tyr	Val	Glu	Ala	Phe	Asp	Met	Gly	Ile	Arg	Lys	Tyr	Tyr	Lys		
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				245					250					255			
Gly	Val	Asp	Phe	Val	Phe	Ile	Asp	Ala	Ser	Phe	Arg	His	Arg	Gln	Asp		
			260					265						270			
Asp	Ile	Tyr	Gly	Gly	Ser	Arg	Gln	Glu	Ile	Met	Lys	Arg	Met	Ile	Leu		
		275					280					285					
Phe	Cys	Lys	Val	Ala	Val	Glu	Val	Pro	Trp	His	Val	Pro	Cys	Gly	Gly		
	290					295					300						
Val	Cys	Tyr	Gly	Asp	Gly	Asn	Leu	Val	Phe	Ile	Ala	Met	Asn	Trp	His		
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Thr	Ala	Leu	Leu	Pro	Val	Tyr	Leu	Lys	Ala	Tyr	Tyr	Arg	Asp	His	Gly		
				325					330					335			
Leu	Met	Gln	Tyr	Thr	Arg	Ser	Val	Leu	Val	Ile	His	Asn	Ile	Gly	His		
			340					345					350				
Gln	Gly	Arg	Gly	Pro	Val	His	Glu	Phe	Pro	Tyr	Met	Asp	Leu	Leu	Asn		
		355					360					365					
Thr	Asn	Leu	Gln	His	Phe	Glu	Leu	Tyr	Asp	Pro	Val	Gly	Gly	Glu	His		
	370					375					380						
Ala	Asn	Ile	Phe	Ala	Ala	Cys	Val	Leu	Lys	Met	Ala	Asp	Arg	Val	Val		
385					390					395					400		
Thr	Val	Ser	Arg	Gly	Tyr	Leu	Trp	Glu	Leu	Lys	Thr	Val	Glu	Gly	Gly		
				405				410						415			
Trp	Gly	Leu	His	Asp	Ile	Ile	Arg	Ser	Asn	Asp	Trp	Lys	Ile	Asn	Gly		
			420					425					430				
Ile	Arg	Glu	Arg	Ile	Asp	His	Gln	Glu	Trp	Asn	Pro	Lys	Val	Asp	Val		
		435					440					445					
His	Leu	Arg	Ser	Asp	Gly	Tyr	Thr	Asn	Tyr	Ser	Leu	Glu	Thr	Leu	Asp		
	450					455					460						

Ala Gly Lys Arg Gln Cys Lys Ala Ala Leu Gln Arg Asp Val Gly Leu  
 465 470 475 480

Glu Val Arg Asp Asp Val Pro Leu Leu Gly Phe Ile Gly Arg Leu Asp  
 485 490 495

Gly Gln Lys Gly Val Asp Ile Ile Gly Asp Ala Met Pro Trp Ile Ala  
 500 505 510

Gly Gln Asp Val Gln Leu Val Met Leu Gly Thr Gly Pro Pro Asp Leu  
 515 520 525

Glu Arg Met Leu Gln His Leu Glu Arg Glu His Pro Asn Lys Val Arg  
 530 535 540

Gly Trp Val Gly Phe Ser Val Leu Met Val His Arg Ile Thr Pro Gly  
 545 550 555 560

Ala Ser Val Leu Val Met Pro Ser Arg Phe Ala Gly Gly Leu Asn Gln  
 565 570 575

Leu Tyr Ala Met Ala Tyr Gly Thr Val Pro Val Val His Ala Val Gly  
 580 585 590

Gly Leu Arg Asp Thr Val Ala Pro Phe Asp Pro Phe Gly Asp Ala Gly  
 595 600 605

Leu Gly Trp Thr Phe Asp Arg Ala Glu Ala Asn Lys Leu Ile Glu Val  
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Leu Ser His Cys Leu Asp Thr Tyr Arg Asn Tyr Glu Glu Ser Trp Lys  
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 Ala Ser Ser Ser Pro Arg Arg Arg Arg Gly Ser Val Gly Ala Ala Leu  
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Arg Ser Tyr Gly Tyr Ser Gly Ala Glu Leu Arg Leu His Trp Ala Arg	
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Arg Gly Pro Pro Gln Asp Gly Ala Ala Ser Val Arg Ala Ala Ala	
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Pro Ala Gly Gly Glu Ser Glu Glu Ala Ala Lys Ser Ser Ser Ser	
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Gln Ala Gly Ala Val Gln Gly Ser Thr Ala Lys Ala Val Asp Ser Ala	
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tca cct ccc aat cct ttg aca tct gct ccg aag caa agt cag agc gct	336
Ser Pro Pro Asn Pro Leu Thr Ser Ala Pro Lys Gln Ser Gln Ser Ala	
100 105 110	
gca atg caa aac gga acg agt ggg ggc agc agc gcg agc acc gcc gcg	384
Ala Met Gln Asn Gly Thr Ser Gly Gly Ser Ser Ala Ser Thr Ala Ala	
115 120 125	
ccg gtg tcc gga ccc aaa gct gat cat cca tca gct cct gtc acc aag	432
Pro Val Ser Gly Pro Lys Ala Asp His Pro Ser Ala Pro Val Thr Lys	
130 135 140	
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Arg Glu Ile Asp Ala Ser Ala Val Lys Pro Glu Pro Ala Gly Asp Asp	
145 150 155 160	
gct aga ccg gtg gaa agc ata ggc atc gct gaa ccg gtg gat gct aag	528
Ala Arg Pro Val Glu Ser Ile Gly Ile Ala Glu Pro Val Asp Ala Lys	
165 170 175	
gct gat gca gct ccg gct aca gat gcg gcg gcg agt gct cct tat gac	576
Ala Asp Ala Ala Pro Ala Thr Asp Ala Ala Ala Ser Ala Pro Tyr Asp	
180 185 190	
agg gag gat aat gaa cct ggc cct ttg gct ggg cct aat gtg atg aac	624
Arg Glu Asp Asn Glu Pro Gly Pro Leu Ala Gly Pro Asn Val Met Asn	
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gtc gtc gtg gtg gct tct gaa tgt gct cct ttc tgc aag aca ggt ggc	672
Val Val Val Val Ala Ser Glu Cys Ala Pro Phe Cys Lys Thr Gly Gly	
210 215 220	
ctt gga gat gtc gtg ggt gct ttg cct aag gct ctg gcg agg aga gga	720
Leu Gly Asp Val Val Gly Ala Leu Pro Lys Ala Leu Ala Arg Arg Gly	
225 230 235 240	
cac cgt gtt atg gtc gtg ata cca aga tat gga gag tat gcc gaa gcc	768
His Arg Val Met Val Val Ile Pro Arg Tyr Gly Glu Tyr Ala Glu Ala	
245 250 255	

cgg gat tta ggt gta agg aga cgt tac aag gta gct gga cag gat tca	816
Arg Asp Leu Gly Val Arg Arg Arg Tyr Lys Val Ala Gly Gln Asp Ser	
260 265 270	
gaa gtt act tat ttt cac tct tac att gat gga gtt gat ttt gta ttc	864
Glu Val Thr Tyr Phe His Ser Tyr Ile Asp Gly Val Asp Phe Val Phe	
275 280 285	
gta gaa gcc cct ccc ttc cgg cac cgg cac aat aat att tat ggg gga	912
Val Glu Ala Pro Pro Phe Arg His Arg His Asn Asn Ile Tyr Gly Gly	
290 295 300	
gaa aga ttg gat att ttg aag cgc atg att ttg ttc tgc aag gcc gct	960
Glu Arg Leu Asp Ile Leu Lys Arg Met Ile Leu Phe Cys Lys Ala Ala	
305 310 315 320	
gtt gag gtt cca tgg tat gct cca tgt ggc ggt act gtc tat ggt gat	1008
Val Glu Val Pro Trp Tyr Ala Pro Cys Gly Thr Val Tyr Gly Asp	
325 330 335	
ggc aac tta gtt ttc att gct aat gat tgg cat acc gca ctt ctg cct	1056
Gly Asn Leu Val Phe Ile Ala Asn Asp Trp His Thr Ala Leu Leu Pro	
340 345 350	
gtc tat cta aag gcc tat tac cgg gac aat ggt ttg atg cag tat gct	1104
Val Tyr Leu Lys Ala Tyr Tyr Arg Asp Asn Gly Leu Met Gln Tyr Ala	
355 360 365	
cgc tct gtg ctt gtg ata cac aac att gct cat cag ggt cgt ggc cct	1152
Arg Ser Val Leu Val Ile His Asn Ile Ala His Gln Gly Arg Gly Pro	
370 375 380	
gta gac gac ttc gtc aat ttt gac ttg cct gaa cac tac atc gac cac	1200
Val Asp Asp Phe Val Asn Phe Asp Leu Pro Glu His Tyr Ile Asp His	
385 390 395 400	
ttc aaa ctg tat gac aac att ggt ggg gat cac agc aac gtt ttt gct	1248
Phe Lys Leu Tyr Asp Asn Ile Gly Gly Asp His Ser Asn Val Phe Ala	
405 410 415	
gcg ggg ctg aag acg gca gac cgg gtg gtg acc gtt agc aat ggc tac	1296
Ala Gly Leu Lys Thr Ala Asp Arg Val Val Thr Val Ser Asn Gly Tyr	
420 425 430	
atg tgg gag ctg aag act tcg gaa ggc ggg tgg ggc ctc cac gac atc	1344
Met Trp Glu Leu Lys Thr Ser Glu Gly Gly Trp Gly Leu His Asp Ile	
435 440 445	
ata aac cag aac gac tgg aag ctg cag ggc atc gtg aac ggc atc gac	1392
Ile Asn Gln Asn Asp Trp Lys Leu Gln Gly Ile Val Asn Gly Ile Asp	
450 455 460	
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Met Ser Glu Trp Asn Pro Ala Val Asp Val His Leu His Ser Asp Asp	
465 470 475 480	

tac acc aac tac acg ttc gag acg ctg gac acc ggc aag cgg cag tgc	1488
Tyr Thr Asn Tyr Thr Phe Glu Thr Leu Asp Thr Gly Lys Arg Gln Cys	
485 490 495	
aag gcc gcc ctg cag cgg cag ctg ggc ctg cag gtc cgc gac gac gtg	1536
Lys Ala Ala Leu Gln Arg Gln Leu Gly Leu Gln Val Arg Asp Asp Val	
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Pro Leu Ile Gly Phe Ile Gly Arg Leu Asp His Gln Lys Gly Val Asp	
515 520 525	
atc atc gcc gac gcg atc cac tgg atc gcg ggg cag gac gtg cag ctc	1632
Ile Ile Ala Asp Ala Ile His Trp Ile Ala Gly Gln Asp Val Gln Leu	
530 535 540	
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Val Met Leu Gly Thr Gly Arg Ala Asp Leu Glu Asp Met Leu Arg Arg	
545 550 555 560	
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Phe Glu Ser Glu His Ser Asp Lys Val Arg Ala Trp Val Gly Phe Ser	
565 570 575	
gtg ccc ctg gcg cac cgc atc acg gcg ggc gcg gac atc ctg ctg atg	1776
Val Pro Leu Ala His Arg Ile Thr Ala Gly Ala Asp Ile Leu Leu Met	
580 585 590	
ccg tcg cgg ttc gag ccg tgc ggg ctg aac cag ctc tac gcc atg gcg	1824
Pro Ser Arg Phe Glu Pro Cys Gly Leu Asn Gln Leu Tyr Ala Met Ala	
595 600 605	
tac ggg acc gtg ccc gtg gtg cac gcc gtg ggg ggg ctc cgg gac acg	1872
Tyr Gly Thr Val Pro Val Val His Ala Val Gly Gly Leu Arg Asp Thr	
610 615 620	
gtg gcg ccg ttc gac ccg ttc aac gac acc ggg ctc ggg tgg acg ttc	1920
Val Ala Pro Phe Asp Pro Phe Asn Asp Thr Gly Leu Gly Trp Thr Phe	
625 630 635 640	
gac cgc gcg gag gcg aac cgg atg atc gac gcg ctc tcg cac tgc ctc	1968
Asp Arg Ala Glu Ala Asn Arg Met Ile Asp Ala Leu Ser His Cys Leu	
645 650 655	
acc acg tac cgg aac tac aag gag agc tgg cgc gcc tgc agg gcg cgc	2016
Thr Thr Tyr Arg Asn Tyr Lys Glu Ser Trp Arg Ala Cys Arg Ala Arg	
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Gly Met Ala Glu Asp Leu Ser Trp Asp His Ala Ala Val Leu Tyr Glu	
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 Arg Ser Tyr Gly Tyr Ser Gly Ala Glu Leu Arg Leu His Trp Ala Arg  
           35                  40                  45  
 Arg Gly Pro Pro Gln Asp Gly Ala Ala Ser Val Arg Ala Ala Ala Ala  
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 Pro Ala Gly Gly Glu Ser Glu Glu Ala Ala Lys Ser Ser Ser Ser Ser  
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 Gln Ala Gly Ala Val Gln Gly Ser Thr Ala Lys Ala Val Asp Ser Ala  
           85                  90                  95  
 Ser Pro Pro Asn Pro Leu Thr Ser Ala Pro Lys Gln Ser Gln Ser Ala  
           100                  105                  110  
 Ala Met Gln Asn Gly Thr Ser Gly Gly Ser Ser Ala Ser Thr Ala Ala  
           115                  120                  125  
 Pro Val Ser Gly Pro Lys Ala Asp His Pro Ser Ala Pro Val Thr Lys  
   130                  135                  140  
 Arg Glu Ile Asp Ala Ser Ala Val Lys Pro Glu Pro Ala Gly Asp Asp  
  145                  150                  155                  160  
 Ala Arg Pro Val Glu Ser Ile Gly Ile Ala Glu Pro Val Asp Ala Lys  
           165                  170                  175  
 Ala Asp Ala Ala Pro Ala Thr Asp Ala Ala Ala Ser Ala Pro Tyr Asp  
           180                  185                  190  
 Arg Glu Asp Asn Glu Pro Gly Pro Leu Ala Gly Pro Asn Val Met Asn  
   195                  200                  205  
 Val Val Val Val Ala Ser Glu Cys Ala Pro Phe Cys Lys Thr Gly Gly  
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 Leu Gly Asp Val Val Gly Ala Leu Pro Lys Ala Leu Ala Arg Arg Gly  
  225                  230                  235                  240  
 His Arg Val Met Val Val Ile Pro Arg Tyr Gly Glu Tyr Ala Glu Ala  
           245                  250                  255  
 Arg Asp Leu Gly Val Arg Arg Arg Tyr Lys Val Ala Gly Gln Asp Ser  
           260                  265                  270



Glu Val Thr Tyr Phe His Ser Tyr Ile Asp Gly Val Asp Phe Val Phe  
 275 280 285  
 Val Glu Ala Pro Pro Phe Arg His Arg His Asn Asn Ile Tyr Gly Gly  
 290 300  
 Glu Arg Leu Asp Ile Leu Lys Arg Met Ile Leu Phe Cys Lys Ala Ala  
 305 310 315 320  
 Val Glu Val Pro Trp Tyr Ala Pro Cys Gly Gly Thr Val Tyr Gly Asp  
 325 330 335  
 Gly Asn Leu Val Phe Ile Ala Asn Asp Trp His Thr Ala Leu Leu Pro  
 340 345 350  
 Val Tyr Leu Lys Ala Tyr Tyr Arg Asp Asn Gly Leu Met Gln Tyr Ala  
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 Arg Ser Val Leu Val Ile His Asn Ile Ala His Gln Gly Arg Gly Pro  
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 385 390 395 400  
 Phe Lys Leu Tyr Asp Asn Ile Gly Gly Asp His Ser Asn Val Phe Ala  
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 Ala Gly Leu Lys Thr Ala Asp Arg Val Val Thr Val Ser Asn Gly Tyr  
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 Met Trp Glu Leu Lys Thr Ser Glu Gly Gly Trp Gly Leu His Asp Ile  
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 Ile Asn Gln Asn Asp Trp Lys Leu Gln Gly Ile Val Asn Gly Ile Asp  
 450 455 460  
 Met Ser Glu Trp Asn Pro Ala Val Asp Val His Leu His Ser Asp Asp  
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 Tyr Thr Asn Tyr Thr Phe Glu Thr Leu Asp Thr Gly Lys Arg Gln Cys  
 485 490 495  
 Lys Ala Ala Leu Gln Arg Gln Leu Gly Leu Gln Val Arg Asp Asp Val  
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 Pro Leu Ile Gly Phe Ile Gly Arg Leu Asp His Gln Lys Gly Val Asp  
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 Val Met Leu Gly Thr Gly Arg Ala Asp Leu Glu Asp Met Leu Arg Arg  
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 Phe Glu Ser Glu His Ser Asp Lys Val Arg Ala Trp Val Gly Phe Ser  
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Val Pro Leu Ala His Arg Ile Thr Ala Gly Ala Asp Ile Leu Leu Met  
580 585 590

Pro Ser Arg Phe Glu Pro Cys Gly Leu Asn Gln Leu Tyr Ala Met Ala  
595 600 605

Tyr Gly Thr Val Pro Val Val His Ala Val Gly Gly Leu Arg Asp Thr  
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Val Ala Pro Phe Asp Pro Phe Asn Asp Thr Gly Leu Gly Trp Thr Phe  
625 630 635 640

Asp Arg Ala Glu Ala Asn Arg Met Ile Asp Ala Leu Ser His Cys Leu  
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Thr Thr Tyr Arg Asn Tyr Lys Glu Ser Trp Arg Ala Cys Arg Ala Arg  
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Gly Met Ala Glu Asp Leu Ser Trp Asp His Ala Ala Val Leu Tyr Glu  
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ccc gcg ctg ctg gcg ccc ccg ctc gtg ccc ggc ttc ctc gcg ccg ccg 96  
Pro Ala Leu Leu Ala Pro Pro Leu Val Pro Gly Phe Leu Ala Pro Pro  
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gcc gag ccc acg ggt gag ccg gca tcg acg ccg ccg ccc gtg ccc gac 144  
Ala Glu Pro Thr Gly Glu Pro Ala Ser Thr Pro Pro Pro Val Pro Asp  
35 40 45

gcc ggc ctg ggg gac ctc ggt ctc gaa cct gaa ggg att gct gaa ggt 192  
Ala Gly Leu Gly Asp Leu Gly Leu Glu Pro Glu Gly Ile Ala Glu Gly  
50 55 60

tcc atc gat aac aca gta gtt gtg gca agt gag caa gat tct gag att 240  
Ser Ile Asp Asn Thr Val Val Val Ala Ser Glu Gln Asp Ser Glu Ile  
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gtg gtt gga aag gag caa gct cga gct aaa gta aca caa agc att gtc 288  
Val Val Gly Lys Glu Gln Ala Arg Ala Lys Val Thr Gln Ser Ile Val  
85 90 95

ttt gta acc ggc gaa gct tct cct tat gca aag tct ggg ggt cta gga	336
Phe Val Thr Gly Glu Ala Ser Pro Tyr Ala Lys Ser Gly Gly Leu Gly	
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gat gtt tgt ggt tca ttg cca gtt gct ctt gct gct cgt ggt cac cgt	384
Asp Val Cys Gly Ser Leu Pro Val Ala Leu Ala Ala Arg Gly His Arg	
115 120 125	
gtg atg gtt gta atg ccc aga tat tta aat ggt acc tcc gat aag aat	432
Val Met Val Val Met Pro Arg Tyr Leu Asn Gly Thr Ser Asp Lys Asn	
130 135 140	
tat gca aat gca ttt tac aca gaa aaa cac att cgg att cca tgc ttt	480
Tyr Ala Asn Ala Phe Tyr Thr Glu Lys His Ile Arg Ile Pro Cys Phe	
145 150 155 160	
ggc ggt gaa cat gaa gtt acc ttc ttc cat gag tat aga gat tca gtt	528
Gly Gly Glu His Glu Val Thr Phe Phe His Glu Tyr Arg Asp Ser Val	
165 170 175	
gac tgg gtg ttt gtt gat cat ccc tca tat cac aga cct gga aat tta	576
Asp Trp Val Phe Val Asp His Pro Ser Tyr His Arg Pro Gly Asn Leu	
180 185 190	
tat gga gat aag ttt ggt gct ttt ggt gat aat cag ttc aga tac aca	624
Tyr Gly Asp Lys Phe Gly Ala Phe Gly Asp Asn Gln Phe Arg Tyr Thr	
195 200 205	
ctc ctt tgc tat gct gca tgt gag gct cct ttg atc ctt gaa ttg gga	672
Leu Leu Cys Tyr Ala Ala Cys Glu Ala Pro Leu Ile Leu Glu Leu Gly	
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Gly Tyr Ile Tyr Gly Gln Asn Cys Met Phe Val Val Asn Asp Trp His	
225 230 235 240	
gcc agt cta gtg cca gtc ctt ctt gct gca aaa tat aga cca tat ggt	768
Ala Ser Leu Val Pro Val Leu Leu Ala Ala Lys Tyr Arg Pro Tyr Gly	
245 250 255	
gtt tat aaa gac tcc cgc agc att ctt gta ata cat aat tta gca cat	816
Val Tyr Lys Asp Ser Arg Ser Ile Leu Val Ile His Asn Leu Ala His	
260 265 270	
cag ggt gta gag cct gca agc aca tat cct gac ctt ggg ttg cca cct	864
Gln Gly Val Glu Pro Ala Ser Thr Tyr Pro Asp Leu Gly Leu Pro Pro	
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Glu Trp Tyr Gly Ala Leu Glu Trp Val Phe Pro Glu Trp Ala Arg Arg	
290 295 300	
cat gcc ctt gac aag ggt gag gca gtt aat ttt ttg aaa ggt gca gtt	960
His Ala Leu Asp Lys Gly Glu Ala Val Asn Phe Leu Lys Gly Ala Val	
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Val	Thr	Ala	Asp	Arg	Ile	Val	Thr	Val	Ser	Lys	Gly	Tyr	Ser	Trp	Glu	
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gtc	aca	act	gct	gaa	ggg	gga	cag	ggc	ctc	aat	gag	ctc	tta	agc	tcc	1056
Val	Thr	Thr	Ala	Glu	Gly	Gly	Gln	Gly	Leu	Asn	Glu	Leu	Leu	Ser	Ser	
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aga	aag	agt	gta	tta	aac	gga	att	gta	aat	gga	att	gac	att	aat	gat	1104
Arg	Lys	Ser	Val	Leu	Asn	Gly	Ile	Val	Asn	Gly	Ile	Asp	Ile	Asn	Asp	
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tgg	aac	cct	gcc	aca	gac	aaa	tgt	atc	ccc	tgt	cat	tat	tct	gtt	gat	1152
Trp	Asn	Pro	Ala	Thr	Asp	Lys	Cys	Ile	Pro	Cys	His	Tyr	Ser	Val	Asp	
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Asp	Leu	Ser	Gly	Lys	Ala	Lys	Cys	Lys	Gly	Ala	Leu	Gln	Lys	Glu	Leu	
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Gly	Leu	Pro	Ile	Arg	Pro	Asp	Val	Pro	Leu	Ile	Gly	Phe	Ile	Gly	Arg	
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Leu	Asp	Tyr	Gln	Lys	Gly	Ile	Asp	Leu	Ile	Gln	Leu	Ile	Ile	Pro	Asp	
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ctc	atg	cgg	gaa	gat	gtt	caa	ttt	gtc	atg	ctt	gga	tct	ggg	gac	cca	1344
Leu	Met	Arg	Glu	Asp	Val	Gln	Phe	Val	Met	Leu	Gly	Ser	Gly	Asp	Pro	
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gag	ctt	gaa	gat	tgg	atg	aga	tct	aca	gag	tcg	atc	ttc	aag	gat	aaa	1392
Glu	Leu	Glu	Asp	Trp	Met	Arg	Ser	Thr	Glu	Ser	Ile	Phe	Lys	Asp	Lys	
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ttt	cgt	gga	tgg	gtt	gga	ttt	agt	gtt	cca	gtt	tcc	cac	cga	ata	act	1440
Phe	Arg	Gly	Trp	Val	Gly	Phe	Ser	Val	Pro	Val	Ser	His	Arg	Ile	Thr	
465					470					475				480		
gcc	ggc	tgc	gat	ata	ttg	tta	atg	cca	tcc	aga	ttc	gaa	cct	tgt	ggg	1488
Ala	Gly	Cys	Asp	Ile	Leu	Leu	Met	Pro	Ser	Arg	Phe	Glu	Pro	Cys	Gly	
			485						490					495		
ctc	aat	cag	cta	tat	gct	atg	cag	tat	ggc	aca	gtt	cct	gtt	gtc	cat	1536
Leu	Asn	Gln	Leu	Tyr	Ala	Met	Gln	Tyr	Gly	Thr	Val	Pro	Val	Val	His	
			500					505					510			
gca	act	ggg	ggc	ctt	aga	gat	acc	gtg	gag	aac	ttc	aac	cct	ttc	ggg	1584
Ala	Thr	Gly	Gly	Leu	Arg	Asp	Thr	Val	Glu	Asn	Phe	Asn	Pro	Phe	Gly	
		515					520					525				
gag	aat	gga	gag	cag	ggg	aca	ggg	tgg	gca	ttc	gca	ccc	cta	acc	aca	1632
Glu	Asn	Gly	Glu	Gln	Gly	Thr	Gly	Trp	Ala	Phe	Ala	Pro	Leu	Thr	Thr	
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gaa aac atg ttt gtg gac att gcg aac tgc aat atc tac ata cag gga 1680  
 Glu Asn Met Phe Val Asp Ile Ala Asn Cys Asn Ile Tyr Ile Gln Gly  
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aca caa gtc ctc ctg gga agg gct aat gaa gcg agg cat gtc aaa aga 1728  
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 Ser Ile Asp Asn Thr Val Val Val Ala Ser Glu Gln Asp Ser Glu Ile  
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 Tyr Ala Asn Ala Phe Tyr Thr Glu Lys His Ile Arg Ile Pro Cys Phe  
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 Gly Gly Glu His Glu Val Thr Phe Phe His Glu Tyr Arg Asp Ser Val  
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 Asp Trp Val Phe Val Asp His Pro Ser Tyr His Arg Pro Gly Asn Leu  
 180 185 190  
 Tyr Gly Asp Lys Phe Gly Ala Phe Gly Asp Asn Gln Phe Arg Tyr Thr  
 195 200 205

Leu Leu Cys Tyr Ala Ala Cys Glu Ala Pro Leu Ile Leu Glu Leu Gly  
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 Gly Tyr Ile Tyr Gly Gln Asn Cys Met Phe Val Val Asn Asp Trp His  
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 Ala Ser Leu Val Pro Val Leu Leu Ala Ala Lys Tyr Arg Pro Tyr Gly  
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 260 265 270  
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 Val Thr Thr Ala Glu Gly Gly Gln Gly Leu Asn Glu Leu Leu Ser Ser  
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 Arg Lys Ser Val Leu Asn Gly Ile Val Asn Gly Ile Asp Ile Asn Asp  
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 Trp Asn Pro Ala Thr Asp Lys Cys Ile Pro Cys His Tyr Ser Val Asp  
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 Asp Leu Ser Gly Lys Ala Lys Cys Lys Gly Ala Leu Gln Lys Glu Leu  
 385 390 395 400  
 Gly Leu Pro Ile Arg Pro Asp Val Pro Leu Ile Gly Phe Ile Gly Arg  
 405 410 415  
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 Glu Leu Glu Asp Trp Met Arg Ser Thr Glu Ser Ile Phe Lys Asp Lys  
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Asp Ile Ser Glu Glu Thr Thr Cys Gly Ala Gly Val Ala Asp Ala Gln	
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gcc ttg aac aga gtt cga gtg gtc ccc cca cca agc gat gga caa aaa	450
Ala Leu Asn Arg Val Arg Val Val Pro Pro Pro Ser Asp Gly Gln Lys	
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Ile Phe Gln Ile Asp Pro Met Leu Gln Gly Tyr Lys Tyr His Leu Glu	
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Tyr Arg Tyr Ser Leu Tyr Arg Arg Ile Arg Ser Asp Ile Asp Glu His	
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Glu Gly Gly Leu Glu Ala Phe Ser Arg Ser Tyr Glu Lys Phe Gly Phe	
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Asn Ala Ser Ala Glu Gly Ile Thr Tyr Arg Glu Trp Ala Pro Gly Ala	
115 120 125	
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Phe Ser Ala Ala Leu Val Gly Asp Val Asn Asn Trp Asp Pro Asn Ala	
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gat cgt atg agc aaa aat gag ttt ggt gtt tgg gaa att ttt ctg cct	738
Asp Arg Met Ser Lys Asn Glu Phe Gly Val Trp Glu Ile Phe Leu Pro	
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Asn Asn Ala Asp Gly Thr Ser Pro Ile Pro His Gly Ser Arg Val Lys	
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Val Arg Met Asp Thr Pro Ser Gly Ile Lys Asp Ser Ile Pro Ala Trp	
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atc aag tac tca gtg cag gcc cca gga gaa ata cca tat gat ggg att	882
Ile Lys Tyr Ser Val Gln Ala Pro Gly Glu Ile Pro Tyr Asp Gly Ile	
195 200 205	
tat tat gat cct cct gaa gag gta aag tat gtg ttc agg cat gcg caa	930
Tyr Tyr Asp Pro Pro Glu Glu Val Lys Tyr Val Phe Arg His Ala Gln	
210 215 220	
cct aaa cga cca aaa tca ttg cgg ata tat gaa aca cat gtc gga atg	978
Pro Lys Arg Pro Lys Ser Leu Arg Ile Tyr Glu Thr His Val Gly Met	
225 230 235	



agt agc ccg gaa ccg aag ata aac aca tat gta aac ttt agg gat gaa	1026
Ser Ser Pro Glu Pro Lys Ile Asn Thr Tyr Val Asn Phe Arg Asp Glu	
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Val Leu Pro Arg Ile Lys Lys Leu Gly Tyr Asn Ala Val Gln Ile Met	
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Ala Ile Gln Glu His Ser Tyr Tyr Gly Ser Phe Gly Tyr His Val Thr	
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Asn Phe Phe Ala Pro Ser Ser Arg Phe Gly Thr Pro Glu Asp Leu Lys	
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Ser Leu Ile Asp Arg Ala His Glu Leu Gly Leu Leu Val Leu Met Asp	
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Val Val His Ser His Ala Ser Ser Asn Thr Leu Asp Gly Leu Asn Gly	
320 325 330	
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Phe Asp Gly Thr Asp Thr His Tyr Phe His Ser Gly Pro Arg Gly His	
335 340 345 350	
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His Trp Met Trp Asp Ser Arg Leu Phe Asn Tyr Gly Asn Trp Glu Val	
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Leu Arg Phe Leu Leu Ser Asn Ala Arg Trp Trp Leu Glu Glu Tyr Lys	
370 375 380	
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Phe Asp Gly Phe Arg Phe Asp Gly Val Thr Ser Met Met Tyr Thr His	
385 390 395	
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His Gly Leu Gln Val Thr Phe Thr Gly Asn Phe Asn Glu Tyr Phe Gly	
400 405 410	
ttt gcc acc gat gta gat gca gtg gtt tac ttg atg ctg gta aat gat	1554
Phe Ala Thr Asp Val Asp Ala Val Val Tyr Leu Met Leu Val Asn Asp	
415 420 425 430	
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Leu Ile His Gly Leu Tyr Pro Glu Ala Val Thr Ile Gly Glu Asp Val	
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Ser Gly Met Pro Thr Phe Ala Leu Pro Val His Asp Gly Gly Val Gly	
450 455 460	

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Phe Asp Tyr Arg Met His Met Ala Val Ala Asp Lys Trp Ile Asp Leu	
465 470 475	
ctc aag caa agt gat gaa act tgg aag atg ggt gat att gtg cac aca	1746
Leu Lys Gln Ser Asp Glu Thr Trp Lys Met Gly Asp Ile Val His Thr	
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ctg aca aat agg agg tgg tta gag aag tgt gta act tat gct gaa agt	1794
Leu Thr Asn Arg Arg Trp Leu Glu Lys Cys Val Thr Tyr Ala Glu Ser	
495 500 505 510	
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His Asp Gln Ala Leu Val Gly Asp Lys Thr Ile Ala Phe Trp Leu Met	
515 520 525	
gac aag gat atg tat gat ttc atg gcc ctc gat aga cct tca act cct	1890
Asp Lys Asp Met Tyr Asp Phe Met Ala Leu Asp Arg Pro Ser Thr Pro	
530 535 540	
acc att gat cgt ggg ata gca tta cat aag atg att aga ctt atc aca	1938
Thr Ile Asp Arg Gly Ile Ala Leu His Lys Met Ile Arg Leu Ile Thr	
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Met Gly Leu Gly Gly Glu Gly Tyr Leu Asn Phe Met Gly Asn Glu Phe	
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gga cat cct gaa tgg ata gat ttt cca aga ggt ccg caa aga ctt cca	2034
Gly His Pro Glu Trp Ile Asp Phe Pro Arg Gly Pro Gln Arg Leu Pro	
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agt ggt aag ttt att cca ggg aat aac aac agt tat gac aaa tgt cgt	2082
Ser Gly Lys Phe Ile Pro Gly Asn Asn Asn Ser Tyr Asp Lys Cys Arg	
595 600 605	
cga aga ttt gac ctg ggt gat gca gac tat ctt agg tat cat ggt atg	2130
Arg Arg Phe Asp Leu Gly Asp Ala Asp Tyr Leu Arg Tyr His Gly Met	
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Gln Glu Phe Asp Gln Ala Met Gln His Leu Glu Gln Lys Tyr Glu Phe	
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Met Thr Ser Asp His Gln Tyr Ile Ser Arg Lys His Glu Glu Asp Lys	
640 645 650	
gtg att gtg ttc gaa aag gga gat ttg gta ttt gtg ttc aac ttc cac	2274
Val Ile Val Phe Glu Lys Gly Asp Leu Val Phe Val Phe Asn Phe His	
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Cys Asn Asn Ser Tyr Phe Asp Tyr Arg Ile Gly Cys Arg Lys Pro Gly	
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 Val Tyr Lys Val Val Leu Asp Ser Asp Ala Gly Leu Phe Gly Gly Phe  
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 Ser Arg Ile His His Ala Ala Glu His Phe Thr Ala Asp Cys Ser His  
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gat aat agg cca tat tca ttc tcg gtt tat aca cca agc aga aca tgt 2466  
 Asp Asn Arg Pro Tyr Ser Phe Ser Val Tyr Thr Pro Ser Arg Thr Cys  
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gtc gtc tat gct cca gtg gag tgatagcggg gtactcgttg ctgcgcggca 2517  
 Val Val Tyr Ala Pro Val Glu  
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Pro Pro Pro Ser Asp Gly Gln Lys Ile Phe Gln Ile Asp Pro Met Leu  
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Gln Gly Tyr Lys Tyr His Leu Glu Tyr Arg Tyr Ser Leu Tyr Arg Arg  
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 Tyr Arg Glu Trp Ala Pro Gly Ala Phe Ser Ala Ala Leu Val Gly Asp  
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 Gly Glu Ile Pro Tyr Asp Gly Ile Tyr Tyr Asp Pro Pro Glu Glu Val  
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 Lys Tyr Val Phe Arg His Ala Gln Pro Lys Arg Pro Lys Ser Leu Arg  
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 Phe Gly Thr Pro Glu Asp Leu Lys Ser Leu Ile Asp Arg Ala His Glu  
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 Leu Gly Leu Leu Val Leu Met Asp Val Val His Ser His Ala Ser Ser  
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 330 335 340  
 Phe His Ser Gly Pro Arg Gly His His Trp Met Trp Asp Ser Arg Leu  
 345 350 355  
 Phe Asn Tyr Gly Asn Trp Glu Val Leu Arg Phe Leu Leu Ser Asn Ala  
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 Arg Trp Trp Leu Glu Glu Tyr Lys Phe Asp Gly Phe Arg Phe Asp Gly  
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Val	Tyr	Leu	Met	Leu	Val	Asn	Asp	Leu	Ile	His	Gly	Leu	Tyr	Pro	Glu	425	430	435
Ala	Val	Thr	Ile	Gly	Glu	Asp	Val	Ser	Gly	Met	Pro	Thr	Phe	Ala	Leu	440	445	450
Pro	Val	His	Asp	Gly	Gly	Val	Gly	Phe	Asp	Tyr	Arg	Met	His	Met	Ala	455	460	465
Val	Ala	Asp	Lys	Trp	Ile	Asp	Leu	Leu	Lys	Gln	Ser	Asp	Glu	Thr	Trp	475	480	485
Lys	Met	Gly	Asp	Ile	Val	His	Thr	Leu	Thr	Asn	Arg	Arg	Trp	Leu	Glu	490	495	500
Lys	Cys	Val	Thr	Tyr	Ala	Glu	Ser	His	Asp	Gln	Ala	Leu	Val	Gly	Asp	505	510	515
Lys	Thr	Ile	Ala	Phe	Trp	Leu	Met	Asp	Lys	Asp	Met	Tyr	Asp	Phe	Met	520	525	530
Ala	Leu	Asp	Arg	Pro	Ser	Thr	Pro	Thr	Ile	Asp	Arg	Gly	Ile	Ala	Leu	535	540	545
His	Lys	Met	Ile	Arg	Leu	Ile	Thr	Met	Gly	Leu	Gly	Gly	Glu	Gly	Tyr	555	560	565
Leu	Asn	Phe	Met	Gly	Asn	Glu	Phe	Gly	His	Pro	Glu	Trp	Ile	Asp	Phe	570	575	580
Pro	Arg	Gly	Pro	Gln	Arg	Leu	Pro	Ser	Gly	Lys	Phe	Ile	Pro	Gly	Asn	585	590	595
Asn	Asn	Ser	Tyr	Asp	Lys	Cys	Arg	Arg	Arg	Phe	Asp	Leu	Gly	Asp	Ala	600	605	610
Asp	Tyr	Leu	Arg	Tyr	His	Gly	Met	Gln	Glu	Phe	Asp	Gln	Ala	Met	Gln	615	620	625
His	Leu	Glu	Gln	Lys	Tyr	Glu	Phe	Met	Thr	Ser	Asp	His	Gln	Tyr	Ile	635	640	645
Ser	Arg	Lys	His	Glu	Glu	Asp	Lys	Val	Ile	Val	Phe	Glu	Lys	Gly	Asp	650	655	660
Leu	Val	Phe	Val	Phe	Asn	Phe	His	Cys	Asn	Asn	Ser	Tyr	Phe	Asp	Tyr	665	670	675
Arg	Ile	Gly	Cys	Arg	Lys	Pro	Gly	Val	Tyr	Lys	Val	Val	Leu	Asp	Ser	680	685	690

Asp Ala Gly Leu Phe Gly Gly Phe Ser Arg Ile His His Ala Ala Glu  
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His Leu Pro Ile Tyr Asp Leu Asp Pro Lys Leu Glu Ile Phe Lys Asp  
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His Phe Arg Tyr Arg Met Lys Arg Phe Leu Glu Gln Lys Gly Ser Ile  
35 40 45

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Glu Glu Asn Glu Gly Ser Leu Glu Ser Phe Ser Lys Gly Tyr Leu Lys	
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Gly Ala Asn His Lys Met Glu Lys Asp Lys Phe Gly Val Trp Ser Ile	
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Lys Ile Asp His Val Lys Lys Pro Ala Ile Pro His Asn Ser Lys	
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Val Lys Phe Arg Phe Leu His Gly Gly Val Trp Val Asp Arg Ile Pro	
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Ala Leu Ile Arg Tyr Ala Thr Val Asp Ala Ser Lys Phe Gly Ala Pro	
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Lys His Pro Arg Pro Ser Lys Pro Ala Ala Pro Arg Ile Tyr Glu Ala	
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Phe Ala Asp Asn Val Leu Pro Arg Ile Arg Ala Asn Asn Tyr Asn Thr	
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Val Gln Leu Met Ala Val Met Glu His Ser Tyr Tyr Ala Ser Phe Gly	
230 235 240	
tac cat gtg aca aat ttc ttt gcg gtt agc agc aga tca ggc aca cca	961
Tyr His Val Thr Asn Phe Phe Ala Val Ser Ser Arg Ser Gly Thr Pro	
245 250 255	
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Glu Asp Leu Lys Tyr Leu Val Asp Lys Ala His Ser Leu Gly Leu Arg	
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Tyr Trp Leu Asp Glu Phe Met Phe Asp Gly Phe Arg Phe Asp Gly Val	
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Val Asp Glu Gly Gly Val Gly Phe Asp Tyr Arg Leu Ala Met Ala Ile	
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cct gat aga tgg att gac tac ctg aag aat aaa gat gac tct gag tgg	1537
Pro Asp Arg Trp Ile Asp Tyr Leu Lys Asn Lys Asp Asp Ser Glu Trp	
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Ser Met Gly Glu Ile Ala His Thr Leu Thr Asn Arg Arg Tyr Thr Glu	
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Lys Thr Ile Ala Phe Leu Leu Met Asp Lys Glu Met Tyr Thr Gly Met	
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Phe Gly Ile Asn Thr Asn Glu Asp Gly Thr Val Tyr Arg Glu Trp Ala  
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Pro Ala Ala Gln Glu Ala Glu Leu Ile Gly Asp Phe Asn Asp Trp Asn  
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Val	Lys	Phe	Arg	Phe	Leu	His	Gly	Gly	Val	Trp	Val	Asp	Arg	Ile	Pro	130	135	140	145
Ala	Leu	Ile	Arg	Tyr	Ala	Thr	Val	Asp	Ala	Ser	Lys	Phe	Gly	Ala	Pro	150	155	160	
Tyr	Asp	Gly	Val	His	Trp	Asp	Pro	Pro	Ala	Ser	Glu	Arg	Tyr	Thr	Phe	165	170	175	
Lys	His	Pro	Arg	Pro	Ser	Lys	Pro	Ala	Ala	Pro	Arg	Ile	Tyr	Glu	Ala	180	185	190	
His	Val	Gly	Met	Ser	Gly	Glu	Lys	Pro	Ala	Val	Ser	Thr	Tyr	Arg	Glu	195	200	205	
Phe	Ala	Asp	Asn	Val	Leu	Pro	Arg	Ile	Arg	Ala	Asn	Asn	Tyr	Asn	Thr	210	215	220	225
Val	Gln	Leu	Met	Ala	Val	Met	Glu	His	Ser	Tyr	Tyr	Ala	Ser	Phe	Gly	230	235	240	
Tyr	His	Val	Thr	Asn	Phe	Phe	Ala	Val	Ser	Ser	Arg	Ser	Gly	Thr	Pro	245	250	255	
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Val	Leu	Met	Asp	Val	Val	His	Ser	His	Ala	Ser	Asn	Asn	Val	Thr	Asp	275	280	285	
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His	Ala	Gly	Asp	Arg	Gly	Tyr	His	Lys	Leu	Trp	Asp	Ser	Arg	Leu	Phe	310	315	320	
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Tyr	Met	Met	Leu	Ala	Asn	His	Leu	Met	His	Lys	Leu	Leu	Pro	Glu	Ala	390	395	400	

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Pro	Asp	Arg	Trp	Ile	Asp	Tyr	Leu	Lys	Asn	Lys	Asp	Asp	Ser	Glu	Trp	435	440	445	
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Lys	Cys	Ile	Ala	Tyr	Ala	Glu	Ser	His	Asp	Gln	Ser	Ile	Val	Gly	Asp	470	475	480	
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Gln	Lys	Met	Ile	His	Phe	Ile	Thr	Met	Ala	Leu	Gly	Gly	Asp	Gly	Tyr	515	520	525	
Leu	Asn	Phe	Met	Gly	Asn	Glu	Phe	Gly	His	Pro	Glu	Trp	Ile	Asp	Phe	530	535	540	545
Pro	Arg	Glu	Gly	Asn	Asn	Trp	Ser	Tyr	Asp	Lys	Cys	Arg	Arg	Gln	Trp	550	555	560	
Ser	Leu	Val	Asp	Thr	Asp	His	Leu	Arg	Tyr	Lys	Tyr	Met	Asn	Ala	Phe	565	570	575	
Asp	Gln	Ala	Met	Asn	Ala	Leu	Asp	Glu	Arg	Phe	Ser	Phe	Leu	Ser	Ser	580	585	590	
Ser	Lys	Gln	Ile	Val	Ser	Asp	Met	Asn	Asp	Glu	Glu	Lys	Val	Ile	Val	595	600	605	
Phe	Glu	Arg	Gly	Asp	Leu	Val	Phe	Val	Phe	Asn	Phe	His	Pro	Lys	Lys	610	615	620	625
Thr	Tyr	Glu	Gly	Tyr	Lys	Val	Gly	Cys	Asp	Leu	Pro	Gly	Lys	Tyr	Arg	630	635	640	
Val	Ala	Leu	Asp	Ser	Asp	Ala	Leu	Val	Phe	Gly	Gly	His	Gly	Arg	Val	645	650	655	
Gly	His	Asp	Val	Asp	His	Phe	Thr	Ser	Pro	Glu	Gly	Val	Pro	Gly	Val	660	665	670	
Pro	Glu	Thr	Asn	Phe	Asn	Asn	Arg	Pro	Asn	Ser	Phe	Lys	Val	Leu	Ser	675	680	685	
Pro	Pro	Arg	Thr	Cys	Val	Ala	Tyr	Tyr	Arg	Val	Asp	Glu	Ala	Gly	Ala	690	695	700	705

Gly Arg Arg Leu His Ala Lys Ala Glu Thr Gly Lys Thr Ser Pro Ala  
                     710                    715                    720  
 Glu Ser Ile Asp Val Lys Ala Ser Arg Ala Ser Ser Lys Glu Asp Lys  
                     725                    730                    735  
 Glu Ala Thr Ala Gly Gly Lys Lys Gly Trp Lys Phe Ala Arg Gln Pro  
                     740                    745                    750  
 Ser Asp Gln Asp Thr Lys  
                     755

<210> 18  
 <211> 153  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(153)

<400> 18  
 atg gcg acg ccc tcg gcc gtg ggc gcc gcg tgc ctc ctc ctc gcg cgg 48  
 Met Ala Thr Pro Ser Ala Val Gly Ala Ala Cys Leu Leu Leu Ala Arg  
   1                    5                    10                    15  
 gcc gcc tgg ccg gcc gcc gtc ggc gac cgg gcg cgc ccg cgg agg ctc 96  
 Ala Ala Trp Pro Ala Ala Val Gly Asp Arg Ala Arg Pro Arg Arg Leu  
                     20                    25                    30  
 cag cgc gtg ctg cgc cgc cgg tgc gtc gcg gag ctg agc agg gag ggg 144  
 Gln Arg Val Leu Arg Arg Arg Cys Val Ala Glu Leu Ser Arg Glu Gly  
                     35                    40                    45  
 ccc cat atg 153  
 Pro His Met  
                     50

<210> 19  
 <211> 51  
 <212> PRT  
 <213> Zea mays

<400> 19  
 Met Ala Thr Pro Ser Ala Val Gly Ala Ala Cys Leu Leu Leu Ala Arg  
   1                    5                    10                    15  
 Ala Ala Trp Pro Ala Ala Val Gly Asp Arg Ala Arg Pro Arg Arg Leu  
                     20                    25                    30  
 Gln Arg Val Leu Arg Arg Arg Cys Val Ala Glu Leu Ser Arg Glu Gly  
                     35                    40                    45  
 Pro His Met  
                     50

<210> 20  
 <211> 1620  
 <212> DNA  
 <213> Zea mays

<220>  
 <221> CDS  
 <222> (1)..(1617)

<400> 20  
 tgc gtc gcg gag ctg agc agg gag gac ctc ggt ctc gaa cct gaa ggg 48  
 Cys Val Ala Glu Leu Ser Arg Glu Asp Leu Gly Leu Glu Pro Glu Gly  
 1 5 10 15  
 att gct gaa ggt tcc atc gat aac aca gta gtt gtg gca agt gag caa 96  
 Ile Ala Glu Gly Ser Ile Asp Asn Thr Val Val Val Ala Ser Glu Gln  
 20 25 30  
 gat tct gag att gtg gtt gga aag gag caa gct cga gct aaa gta aca 144  
 Asp Ser Glu Ile Val Val Gly Lys Glu Gln Ala Arg Ala Lys Val Thr  
 35 40 45  
 caa agc att gtc ttt gta acc ggc gaa gct tct cct tat gca aag tct 192  
 Gln Ser Ile Val Phe Val Thr Gly Glu Ala Ser Pro Tyr Ala Lys Ser  
 50 55 60  
 ggg ggt cta gga gat gtt tgt ggt tca ttg cca gtt gct ctt gct gct 240  
 Gly Gly Leu Gly Asp Val Cys Gly Ser Leu Pro Val Ala Leu Ala Ala  
 65 70 75 80  
 cgt ggt cac cgt gtg atg gtt gta atg ccc aga tat tta aat ggt acc 288  
 Arg Gly His Arg Val Met Val Val Met Pro Arg Tyr Leu Asn Gly Thr  
 85 90 95  
 tcc gat aag aat tat gca aat gca ttt tac aca gaa aaa cac att cgg 336  
 Ser Asp Lys Asn Tyr Ala Asn Ala Phe Tyr Thr Glu Lys His Ile Arg  
 100 105 110  
 att cca tgc ttt ggc ggt gaa cat gaa gtt acc ttc ttc cat gag tat 384  
 Ile Pro Cys Phe Gly Gly Glu His Glu Val Thr Phe Phe His Glu Tyr  
 115 120 125  
 aga gat tca gtt gac tgg gtg ttt gtt gat cat ccc tca tat cac aga 432  
 Arg Asp Ser Val Asp Trp Val Phe Val Asp His Pro Ser Tyr His Arg  
 130 135 140  
 cct gga aat tta tat gga gat aag ttt ggt gct ttt ggt gat aat cag 480  
 Pro Gly Asn Leu Tyr Gly Asp Lys Phe Gly Ala Phe Gly Asp Asn Gln  
 145 150 155 160  
 ttc aga tac aca ctc ctt tgc tat gct gca tgt gag gct cct ttg atc 528  
 Phe Arg Tyr Thr Leu Leu Cys Tyr Ala Ala Cys Glu Ala Pro Leu Ile  
 165 170 175

ctt gaa ttg gga gga tat att tat gga cag aat tgc atg ttt gtt gtc	576
Leu Glu Leu Gly Gly Tyr Ile Tyr Gly Gln Asn Cys Met Phe Val Val	
180 185 190	
aat gat tgg cat gcc agt cta gtg cca gtc ctt ctt gct gca aaa tat	624
Asn Asp Trp His Ala Ser Leu Val Pro Val Leu Leu Ala Ala Lys Tyr	
195 200 205	
aga cca tat ggt gtt tat aaa gac tcc cgc agc att ctt gta ata cat	672
Arg Pro Tyr Gly Val Tyr Lys Asp Ser Arg Ser Ile Leu Val Ile His	
210 215 220	
aat tta gca cat cag ggt gta gag cct gca agc aca tat cct gac ctt	720
Asn Leu Ala His Gln Gly Val Glu Pro Ala Ser Thr Tyr Pro Asp Leu	
225 230 235 240	
ggg ttg cca cct gaa tgg tat gga gct ctg gag tgg gta ttc cct gaa	768
Gly Leu Pro Pro Glu Trp Tyr Gly Ala Leu Glu Trp Val Phe Pro Glu	
245 250 255	
tgg gcg agg agg cat gcc ctt gac aag ggt gag gca gtt aat ttt ttg	816
Trp Ala Arg Arg His Ala Leu Asp Lys Gly Glu Ala Val Asn Phe Leu	
260 265 270	
aaa ggt gca gtt gtg aca gca gat cga atc gtg act gtc agt aag ggt	864
Lys Gly Ala Val Val Thr Ala Asp Arg Ile Val Thr Val Ser Lys Gly	
275 280 285	
tat tcg tgg gag gtc aca act gct gaa ggt gga cag ggc ctc aat gag	912
Tyr Ser Trp Glu Val Thr Thr Ala Glu Gly Gly Gln Gly Leu Asn Glu	
290 295 300	
ctc tta agc tcc aga aag agt gta tta aac gga att gta aat gga att	960
Leu Leu Ser Ser Arg Lys Ser Val Leu Asn Gly Ile Val Asn Gly Ile	
305 310 315 320	
gac att aat gat tgg aac cct gcc aca gac aaa tgt atc ccc tgt cat	1008
Asp Ile Asn Asp Trp Asn Pro Ala Thr Asp Lys Cys Ile Pro Cys His	
325 330 335	
tat tct gtt gat gac ctc tct gga aag gcc aaa tgt aaa ggt gca ttg	1056
Tyr Ser Val Asp Asp Leu Ser Gly Lys Ala Lys Cys Lys Gly Ala Leu	
340 345 350	
cag aag gag ctg ggt tta cct ata agg cct gat gtt cct ctg att ggc	1104
Gln Lys Glu Leu Gly Leu Pro Ile Arg Pro Asp Val Pro Leu Ile Gly	
355 360 365	
ttt att gga agg ttg gat tat cag aaa ggc att gat ctc att caa ctt	1152
Phe Ile Gly Arg Leu Asp Tyr Gln Lys Gly Ile Asp Leu Ile Gln Leu	
370 375 380	
atc ata cca gat ctc atg cgg gaa gat gtt caa ttt gtc atg ctt gga	1200
Ile Ile Pro Asp Leu Met Arg Glu Asp Val Gln Phe Val Met Leu Gly	
385 390 395 400	

tct ggt gac cca gag ctt gaa gat tgg atg aga tct aca gag tcg atc	1248
Ser Gly Asp Pro Glu Leu Glu Asp Trp Met Arg Ser Thr Glu Ser Ile	
405 410 415	
ttc aag gat aaa ttt cgt gga tgg gtt gga ttt agt gtt cca gtt tcc	1296
Phe Lys Asp Lys Phe Arg Gly Trp Val Gly Phe Ser Val Pro Val Ser	
420 425 430	
cac cga ata act gcc ggc tgc gat ata ttg tta atg cca tcc aga ttc	1344
His Arg Ile Thr Ala Gly Cys Asp Ile Leu Leu Met Pro Ser Arg Phe	
435 440 445	
gaa cct tgt ggt ctc aat cag cta tat gct atg cag tat ggc aca gtt	1392
Glu Pro Cys Gly Leu Asn Gln Leu Tyr Ala Met Gln Tyr Gly Thr Val	
450 455 460	
cct gtt gtc cat gca act ggg ggc ctt aga gat acc gtg gag aac ttc	1440
Pro Val Val His Ala Thr Gly Gly Leu Arg Asp Thr Val Glu Asn Phe	
465 470 475 480	
aac cct ttc ggt gag aat gga gag cag ggt aca ggg tgg gca ttc gca	1488
Asn Pro Phe Gly Glu Asn Gly Glu Gln Gly Thr Gly Trp Ala Phe Ala	
485 490 495	
ccc cta acc aca gaa aac atg ttt gtg gac att gcg aac tgc aat atc	1536
Pro Leu Thr Thr Glu Asn Met Phe Val Asp Ile Ala Asn Cys Asn Ile	
500 505 510	
tac ata cag gga aca caa gtc ctc ctg gga agg gct aat gaa gcg agg	1584
Tyr Ile Gln Gly Thr Gln Val Leu Leu Gly Arg Ala Asn Glu Ala Arg	
515 520 525	
cat gtc aaa aga ctt cac gtg gga cca tgc cgc tga	1620
His Val Lys Arg Leu His Val Gly Pro Cys Arg	
530 535	

<210> 21  
 <211> 539  
 <212> PRT  
 <213> Zea mays

<400> 21  
 Cys Val Ala Glu Leu Ser Arg Glu Asp Leu Gly Leu Glu Pro Glu Gly  
 1 5 10 15  
 Ile Ala Glu Gly Ser Ile Asp Asn Thr Val Val Val Ala Ser Glu Gln  
 20 25 30  
 Asp Ser Glu Ile Val Val Gly Lys Glu Gln Ala Arg Ala Lys Val Thr  
 35 40 45  
 Gln Ser Ile Val Phe Val Thr Gly Glu Ala Ser Pro Tyr Ala Lys Ser  
 50 55 60  
 Gly Gly Leu Gly Asp Val Cys Gly Ser Leu Pro Val Ala Leu Ala Ala  
 65 70 75 80



Arg	Gly	His	Arg	Val	Met	Val	Val	Met	Pro	Arg	Tyr	Leu	Asn	Gly	Thr	85	90	95	
Ser	Asp	Lys	Asn	Tyr	Ala	Asn	Ala	Phe	Tyr	Thr	Glu	Lys	His	Ile	Arg	100	105	110	
Ile	Pro	Cys	Phe	Gly	Gly	Glu	His	Glu	Val	Thr	Phe	Phe	His	Glu	Tyr	115	120	125	
Arg	Asp	Ser	Val	Asp	Trp	Val	Phe	Val	Asp	His	Pro	Ser	Tyr	His	Arg	130	135	140	
Pro	Gly	Asn	Leu	Tyr	Gly	Asp	Lys	Phe	Gly	Ala	Phe	Gly	Asp	Asn	Gln	145	150	155	160
Phe	Arg	Tyr	Thr	Leu	Leu	Cys	Tyr	Ala	Ala	Cys	Glu	Ala	Pro	Leu	Ile	165	170	175	
Leu	Glu	Leu	Gly	Gly	Tyr	Ile	Tyr	Gly	Gln	Asn	Cys	Met	Phe	Val	Val	180	185	190	
Asn	Asp	Trp	His	Ala	Ser	Leu	Val	Pro	Val	Leu	Leu	Ala	Ala	Lys	Tyr	195	200	205	
Arg	Pro	Tyr	Gly	Val	Tyr	Lys	Asp	Ser	Arg	Ser	Ile	Leu	Val	Ile	His	210	215	220	
Asn	Leu	Ala	His	Gln	Gly	Val	Glu	Pro	Ala	Ser	Thr	Tyr	Pro	Asp	Leu	225	230	235	240
Gly	Leu	Pro	Pro	Glu	Trp	Tyr	Gly	Ala	Leu	Glu	Trp	Val	Phe	Pro	Glu	245	250	255	
Trp	Ala	Arg	Arg	His	Ala	Leu	Asp	Lys	Gly	Glu	Ala	Val	Asn	Phe	Leu	260	265	270	
Lys	Gly	Ala	Val	Val	Thr	Ala	Asp	Arg	Ile	Val	Thr	Val	Ser	Lys	Gly	275	280	285	
Tyr	Ser	Trp	Glu	Val	Thr	Thr	Ala	Glu	Gly	Gly	Gln	Gly	Leu	Asn	Glu	290	295	300	
Leu	Leu	Ser	Ser	Arg	Lys	Ser	Val	Leu	Asn	Gly	Ile	Val	Asn	Gly	Ile	305	310	315	320
Asp	Ile	Asn	Asp	Trp	Asn	Pro	Ala	Thr	Asp	Lys	Cys	Ile	Pro	Cys	His	325	330	335	
Tyr	Ser	Val	Asp	Asp	Leu	Ser	Gly	Lys	Ala	Lys	Cys	Lys	Gly	Ala	Leu	340	345	350	
Gln	Lys	Glu	Leu	Gly	Leu	Pro	Ile	Arg	Pro	Asp	Val	Pro	Leu	Ile	Gly	355	360	365	
Phe	Ile	Gly	Arg	Leu	Asp	Tyr	Gln	Lys	Gly	Ile	Asp	Leu	Ile	Gln	Leu	370	375	380	

50

Ile Ile Pro Asp Leu Met Arg Glu Asp Val Gln Phe Val Met Leu Gly  
385 390 395 400

Ser Gly Asp Pro Glu Leu Glu Asp Trp Met Arg Ser Thr Glu Ser Ile  
405 410 415

Phe Lys Asp Lys Phe Arg Gly Trp Val Gly Phe Ser Val Pro Val Ser  
420 425 430

His Arg Ile Thr Ala Gly Cys Asp Ile Leu Leu Met Pro Ser Arg Phe  
435 440 445

Glu Pro Cys Gly Leu Asn Gln Leu Tyr Ala Met Gln Tyr Gly Thr Val  
450 455 460

Pro Val Val His Ala Thr Gly Gly Leu Arg Asp Thr Val Glu Asn Phe  
465 470 475 480

Asn Pro Phe Gly Glu Asn Gly Glu Gln Gly Thr Gly Trp Ala Phe Ala  
485 490 495

Pro Leu Thr Thr Glu Asn Met Phe Val Asp Ile Ala Asn Cys Asn Ile  
500 505 510

Tyr Ile Gln Gly Thr Gln Val Leu Leu Gly Arg Ala Asn Glu Ala Arg  
515 520 525

His Val Lys Arg Leu His Val Gly Pro Cys Arg  
530 535

<210> 22  
<211> 30  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 22  
gtggatccat ggcgacgccc tcggccgtgg

30

<210> 23  
<211> 35  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
primer

<400> 23  
ctgaattcca tatggggccc ctccctgctc agctc

35

<210> 24  
 <211> 36  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 primer

<400> 24  
 ctctgagctc aagcttgcta ctttctttcc ttaatg 36

<210> 25  
 <211> 29  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 primer

<400> 25  
 gtctccgcgg tgggtgcctt gcttcctag 29

<210> 26  
 <211> 24  
 <212> DNA  
 <213> Zea mays

<400> 26  
 tgcgtcgcgg agctgagcag ggag 24

<210> 27  
 <211> 8  
 <212> PRT  
 <213> Zea mays

<400> 27  
 Cys Val Ala Glu Leu Ser Arg Glu  
 1 5

<210> 28  
 <211> 24  
 <212> RNA  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
 oligonucleotide

<400> 28  
 augaugauga ugaugaugau gaug 24

<210> 29  
 <211> 36  
 <212> RNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Synthetic  
         oligonucleotide  
  
 <400> 29  
 aagaagaaga agaagaagaa gaagaagaag aagaag 36  
  
 <210> 30  
 <211> 18  
 <212> RNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Synthetic  
         oligonucleotide  
  
 <400> 30  
 aaaaaaaaaa aaaaaaaaaa 18  
  
 <210> 31  
 <211> 11  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Synthetic  
         oligonucleotide  
  
 <400> 31  
 agataatgca g 11  
  
 <210> 32  
 <211> 10  
 <212> DNA  
 <213> Artificial Sequence  
  
 <220>  
 <223> Description of Artificial Sequence: Synthetic  
         oligonucleotide  
  
 <400> 32  
 aacaatggct 10  
  
 <210> 33  
 <211> 56  
 <212> PRT  
 <213> Artificial Sequence

&lt;220&gt;

<223> Description of Artificial Sequence: Synthetic  
consensus sequence

&lt;400&gt; 33

Met Ala Ser Ser Met Leu Ser Ser Ala Ala Val Ala Thr Arg Thr Asn  
1 5 10 15Pro Ala Gln Ala Ser Met Val Ala Pro Phe Thr Gly Leu Lys Ser Ala  
20 25 30Ala Phe Pro Val Ser Arg Lys Gln Asn Leu Asp Ile Thr Ser Ile Ala  
35 40 45Ser Asn Gly Gly Arg Val Gln Cys  
50 55

&lt;210&gt; 34

&lt;211&gt; 58

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 34

Met Ala Pro Thr Val Met Met Ala Ser Ser Ala Thr Ala Thr Arg Thr  
1 5 10 15Asn Pro Ala Gln Ala Ser Ala Val Ala Pro Phe Gln Gly Leu Lys Ser  
20 25 30Thr Ala Ser Leu Pro Val Ala Arg Arg Ser Ser Arg Ser Leu Gly Asn  
35 40 45Val Ala Ser Asn Gly Gly Arg Ile Arg Cys  
50 55

&lt;210&gt; 35

&lt;211&gt; 58

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 35

Met Ala Gln Ile Leu Ala Pro Ser Thr Gln Trp Gln Met Arg Ile Thr  
1 5 10 15Lys Thr Ser Pro Cys Ala Thr Pro Ile Thr Ser Lys Met Trp Ser Ser  
20 25 30Leu Val Met Lys Gln Thr Lys Lys Val Ala His Ser Ala Lys Phe Arg  
35 40 45Val Met Ala Val Asn Ser Glu Asn Gly Thr  
50 55

<210> 36  
 <211> 74  
 <212> PRT  
 <213> Zea mays

<400> 36  
 Met Ala Ala Leu Ala Thr Ser Gln Leu Val Ala Thr Arg Ala Gly His  
     1                    5                    10                    15  
 Gly Val Pro Asp Ala Ser Thr Phe Arg Arg Gly Ala Ala Gln Gly Leu  
                     20                    25                    30  
 Arg Gly Ala Arg Ala Ser Ala Ala Ala Asp Thr Leu Ser Met Arg Thr  
                     35                    40                    45  
 Ser Ala Arg Ala Ala Pro Arg His Gln Gln Gln Ala Arg Arg Gly Gly  
                     50                    55                    60  
 Arg Phe Pro Phe Pro Ser Leu Val Val Cys  
     65                    70

<210> 37  
 <211> 39  
 <212> PRT  
 <213> Zea mays

<220>  
 <221> MOD\_RES  
 <222> (17)  
 <223> Variable amino acid

<400> 37  
 Met Ala Thr Pro Ser Ala Val Gly Ala Ala Cys Leu Leu Leu Ala Arg  
     1                    5                    10                    15  
 Xaa Ala Trp Pro Ala Ala Val Gly Asp Arg Ala Arg Pro Arg Arg Leu  
                     20                    25                    30  
 Gln Arg Val Leu Arg Arg Arg  
                     35

<210> 38  
 <211> 5  
 <212> PRT  
 <213> Artificial Sequence

<220>  
 <223> Description of Artificial Sequence: Synthetic  
           peptide

<400> 38  
 Ala Glu Leu Ser Arg  
     1                    5

<210> 39  
<211> 8  
<212> PRT  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Synthetic  
peptide

<220>  
<221> MOD\_RES  
<222> (2)  
<223> Variable amino acid

<400> 39  
Lys Xaa Gly Gly Leu Gly Asp Val  
1 5

<210> 40  
<211> 5  
<212> PRT  
<213> Unknown Organism

<220>  
<223> Description of Unknown Organism: ADPG binding  
domain

<400> 40  
Lys Thr Gly Gly Leu  
1 5